

VASIL'YEVA, A. B., Doc Phys-Math Sci -- "Asymptotic methods
in the theory of ordinary differential equations with small
parameters ^{with} at senior derivatives." Mos, 1961. (Mos State
U im M. V. Lomonosov, Phys Fac) (KL, 8-61, 225)

- 1 -

VASIL'YEVA, A. B., VOLOSOV, V. M. and TIMONOV, A. N.

"Differential equations containing a small parameter."

Paper presented at the Intl. Symposium on Nonlinear Vibrations, Kiev, USSR,
9-19 Sep 61

Moscow State University, Moscow

VASIL'YEVA, A. B. (Moskva)

Asymptotic behavior of solutions to differential-difference
equations in the case of a small deviation of the argument.
Zhur. vych. mat. i mat. fiz. 2 no.5:768-786 S-O '62.
(MIRA 16:1)

(Difference equations)

VASIL'YEVA, A.B.

Asymptotic methods in the theory of small-parameter ordinary
differential equations with higher derivatives (author's
summary of her doctor's thesis). Usp. mat.nauk 17 no.4:
225-231 '62. (MIRA 15:8)

(Differential equations)

16.3400

34466
S/C20/62/142/004/003/022
B112/B102

AUTHOR: Vasil'yeva, A. B.

TITLE: Asymptotic formulas for solutions of ordinary differential equations with a small parameter at a higher derivative, which are valid on a semi-infinite interval

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 4, 1962, 769 - 772

TEXT: In two earlier papers (DAN, 124, No. 3 (1959), Matem. sborn. 50 (92), No. 1 (1960)) of the author, it is shown that for the solutions of the system

$$\mu dz/dt = F(z, y, t), \mu \geq 0,$$

$$dy/dt = f(z, y, t),$$

$$z|_{t=0} = z^0, y|_{t=0} = y^0$$

certain asymptotic formulas $x(t, \mu) = X_n + R_{n+1}$,

$$X_n = (x_0^{(1)} + \dots + \mu^{n(1)} x_n^{(1)}) + (x_0^{(2)} + \dots + \mu^{n(2)} x_n^{(2)}) - (x_{00}^{(2)} + \dots + \mu^{n(2)} x_{on}^{(2)}) -$$

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Asymptotic formulas for ...

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+ $t^{n(2)}_{x_{no}}$)

with $|R_{n+1}| < c\mu^{n+1}$ are valid on an interval $0 \leq t \leq T$.

In the present paper it is demonstrated that under certain additional conditions these asymptotic formulas are valid on the semi-infinite interval $0 \leq t < \infty$. There are 7 Soviet references

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M V Lomonosov)

PRESENTED: September 20, 1961, by I. G. Petrovskiy, Academician

SUBMITTED: September 13, 1961

Card 2/2

VASIL'YEVA, A.B.

An equation of the neutral type with a slight lag. Dokl. Ak. SSSR
145 no.3:495-497 J1 '62. (MIRA 15:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
Predstavleno akademikom I.G. Petrovskim.
(Differential equations)

VASIL'YEVA, A.B.

Neutral type equation with small time lag. Trudy Sem. po teor.
diff. urav. s otklon. arg. 2:50-67 '63.

(MIRA 18:2)

L 18534-63

EWI(d)/FCC(w)/BDS AFFTC/IJP(G) Pg-4

ACCESSION NR: AP3004954

S/0208/63/003/004/0611/0642

56

AUTHOR: Vasil'yeva, A. B. (Moscow)

TITLE: Asymptotic methods in the theory of ordinary differential equations with small parameters for higher derivatives 16

SOURCE: Zhurnal vyshisl. matematiki i matematich. fiziki, v. 3, no. 4, 1963, 611-642

TOPIC TAGS: asymptotic method , small parameter, differential equation , stability

ABSTRACT: Chapter headings are:

Introduction

Chapter I. Asymptotic formulas for solution of a problem with initial conditions (Cauchy problem)

1. Statement of the problem. Theorem on transition to the limit.

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2. Construction of the asymptotic expansion.
3. Application of asymptotic formulas for the Cauchy problem to the study of problems with other additional conditions.
4. Applications and examples.

Chapter II. Generalization of asymptotic formulas to the case of small parameters and an infinite interval.

5. Case of small parameters.
6. Case of infinite interval for t .

Chapter III. Equations with altered arguments.

7. Asymptotic formulas for solutions of neutral type equations.

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In applications (kinetics, radiotechnics, hydrodynamics) one often encounters differential equations containing the small parameter μ as a factor in the derivatives:

$$\mu \frac{dz}{dt} = F(z, y, t), \quad \frac{dy}{dt} = f(z, y, t) \quad (1)$$

($\mu > 0$, z, y are vectors) and there arises the problem of studying the dependence of the solution of such a system of equations on the parameter μ . In the case of an equation of the form

$$\frac{dx}{dt} = F(x, t, \mu), \quad (2)$$

in which the right part is an n -fold differentiable function of all its arguments, this question has been thoroughly studied and the results are found in books on differential equations, i.e., I. G. Petrovskiy (Lektsii po teorii oby*knovenny*kh differentsial'ny*kh uravneniy. M.-L., Gostekhizdat, 1952) Chapter III, and L. S. Pontryagin (Oby*knovenny*ye differentsial'ny*ye uravneniya. M., Fizmatgiz, 1961),

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Chapter I. Such a case can be called regular. If system (1) is rewritten in form (2), then in the right part of (2) for $\mu = 0$ there is a singularity by which is meant the presence of many effects, new in comparison with the regular case, which hold for (1). In recent years many papers have appeared which are concerned with studying these effects which are very diverse in the dependence on the type of right parts of (1) and on the kind of additional conditions by which the solution is determined. The aim of this article is the indication of asymptotic methods which are applicable to the study of the Cauchy problem for equation (1), i.e., the problem with initial conditions

$$z|_{t=t_0} = z^0, \quad y|_{t=t_0} = y^0, \quad (3)$$

and also a generalization of these methods to more complex systems. The first question which arises in studying asymptotics of the solution of (1), (3) is the question of passage to the limit in this solution as $\mu \rightarrow 0$. If in (1) one formally sets $\mu = 0$, then one obtains the simpler, so-called degenerate, system

$$z = \varphi(y, t), \quad \frac{dy}{dt} = f(z, y, t). \quad (4)$$

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($\varphi(y, t)$ is one of the roots of the equation $F(x, y, t) = 0$). The solution of this system cannot, generally speaking, satisfy all the initial conditions (3). Define this solution by the initial condition

$$y|_{t=t^0} = y^0. \quad (5)$$

The solution of (1), (3) as $\mu \rightarrow 0$ actually tends to the solution of (4), (5) — here is an analogy to the regular case (2). However there are two features distinguishing this case from the regular one: 1) In the regular case (2) the limit passage to the solution of the equation $dx/dt = F(x, t, 0)$ occurs if the right part (2) is sufficiently smooth, the passage from the solution of (1), (3) to the solution of (4), (5) occurs only under a special requirement concerning $\varphi(y, t)$ (Chapter I, § 1, requirement of stability of the root); 2) the solution of the system $dx/dt = F(x, t, 0)$ satisfying the same initial condition $x|_{t=t^0} = x^0$,

as well as the solution of the original system, approximates the solution of system (2) uniformly on each interval $t^0 \leq t \leq T$ of variation of the independent variable which includes the initial point t^0 at the time that solutions of (1),

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(3) and (4), (5) in a neighborhood of $t = t^0$, generally speaking, differ strongly as a result of the difference in the initial conditions (3) and (5). The limiting function for z is discontinuous ($z|_{t=t^0} = z^0 \neq \varphi(y^0, t^0)$). Up to the passage to

the limit, if μ is sufficiently small, instead of discontinuity there will be a rapid change of z , a so-called region of boundary layer. The limit passage to problem (1), (3) is studied in detail in Chapter I. After establishment of the limit passage in the solution of the Cauchy problem, it is natural to pose the problem of obtaining asymptotic formulas in the parameter μ for this solution. In the regular case the role of asymptotic formula for the solution satisfying the initial condition $x|_{t=t^0} = x^0$ can be played by the usual Maclaurin formula

whose coefficients are determined from variational equations and satisfy the zero initial conditions in relation with the fact that x^0 does not depend on μ . Study shows that for the solution of (1), (3) outside the boundary layer one can keep the Maclaurin formula as asymptotic formula where the coefficients of this expansion, as before, will satisfy variational equations. However if, analogously to the regular case, one attempts to determine them, taking the solution

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of the variational equations satisfying the zero initial conditions, then the obtained result is not valid, i.e., the coefficients thus obtained are not limit values for derivatives in μ of the solution of the original problem. It turns out that, in order to obtain correct values of the coefficients of the Maclaurin expansion from the variational equations, it is necessary to determine the solution of these equations for special initial conditions which are, generally speaking, distinct from the zero ones. The asymptotic formulas thus obtained have a uniform character for $t \geq t_1$, (where t_1 is an arbitrarily close to t^0 but fixed number as $\mu \rightarrow 0$) but perfectly unsuitable in a neighborhood of t^0 . In order to construct asymptotic formulas having a uniform character on the entire interval $t^0 \leq t \leq T$ also including the region of boundary layer, it is necessary to combine the above Maclaurin expansion with an expansion of another form whose terms are exponentially decreasing functions of the type $e^{-\alpha(t-t^0)/\mu}$. The construction of a uniform asymptotic formula for the solution of (1), (3) is done in § 2 of Chapter I. Asymptotic formulas constructed for the Cauchy problem contain as parameters z^0, y^0 , thanks to which they can be used for the purpose of obtaining asymptotic formulas for problems with other additional conditions. This area of problems is investigated in § 3 of Chapter I. In § 4 of Chapter I

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the author gives problems with concrete contents leading to a system of type (1). Chapter II deals with the case where there are small parameters of various orders of smallness for the derivatives in the system of equations. For such a system one can write asymptotic formulas of the same type as in § 2 of Chapter I (§ 5). The problem of extension of the asymptotic formulas of Chapter I to an infinite interval of variation of t (§ 6) is clearly related to the problem of parameters of various orders of smallness. In all these problems for small μ , there is an occurrence of boundary layer since the solution of the degenerate equation cannot satisfy all the additional conditions imposed for the original equation (1). One might expect that in equations of type other than (1) with, however, the singularity that for $\mu = 0$ part of the additional conditions are lost, one will also observe the appearance of a boundary layer whose structure is analogous to that for system (1). This is the situation with differential-difference equations

$$\dot{y}(t) = P(t, y(t), y(t - \mu), \dot{y}(t - \mu)), \quad (6)$$

whose solution is determined by the additional condition

$$y(t) = \varphi(t) \quad (7)$$

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ACCESSION NR: AP3004954

on the initial set $t^0 \leq t \leq t^0 + \mu$. The corresponding degenerate ($\mu = 0$) equation is an ordinary differential equation and its solution is determined by an initial condition at a point. Study shows that in this case one actually observes the appearance of a boundary layer in a neighborhood $t = t^0$ and for the solution of problem (6), (7) one can construct an asymptotic solution in perfect analogy to the way it was done for (1). An equation of form (6) is considered in Chapter III. Orig. art. has: 104 formulas.

ASSOCIATION: none

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NO REF SOV: 062

OTHER: 014

Card 9/9

L 15568-63

EWI(a)/FCC(w)/BDS AFFTC IJP(C)

S/0012/63/018/003/0015/0086

ACCESSION NR: AP3003357

AUTHOR: Vasil'yeva, A. B.

TITLE: Asymptotic solutions of problems for higher order ordinary nonlinear differential equations with small parameter

SOURCE: Uspekhi matematicheskikh nauk, v. 18, no. 3, 1963, 15-86

TOPIC TAGS: stability, continuity at zero, differential equation, nonlinear, continuity, zero

ABSTRACT: The chapter titles are:

Introduction

I. Asymptotically stable case. Asymptotics of the solution of the problem with initial conditions.

1. Study of limiting passage in the Cauchy problem.
2. Construction of the asymptotic expansion.

II. Asymptotically stable case. Problems allowing study on the basis of the

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ACCESSION NR: AP3003357

asymptotics constructed for the Cauchy problem.

1. Two point boundary value problem. Solution having, in the limit, jump z on one of the ends of the interval.
2. Two point boundary value problem. Solution having, in the limit, jump z at some interior point of the interval.
3. Problems with other additional conditions.
4. Solution having, in the limit, jump y on one of the ends of the interval.

III. Hyperbolic case.

1. Periodic solutions.
2. Two point boundary value problem. Solution having, in the limit, jump z at the ends of the interval.
3. Two point boundary value problem. Solution having, in the limit, jump z at some interior points of the interval.

The author considers system

$$\left. \begin{aligned} \mu \frac{dz}{dt} &= F(z, y, t), \\ \frac{dy}{dt} &= f(z, y, t) \end{aligned} \right\} \quad (1)$$

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ACCESSION NR: AP3003357

and is interested in the question of continuity of the solution with respect to μ at $\mu = 0$. She first points out that this system differs significantly from system

$$\frac{dx}{dt} = F(t, x, \mu), \quad (2)$$

in this regard. The latter behaves quite well under suitable regularity conditions, while the former, even in a very simple linear case, can misbehave. In the general nonlinear case the limiting character of the integral curves is related to the character of the fixed value $z = \varphi(y^0, t^0)$ of the auxiliary system

$$\frac{dz}{dt} = F(z, y^0, t^0), \quad (3)$$

which can be obtained from (1) if the variables y and t in it are fixed. To each isolated solution (root) $z = \varphi(y, t)$ of the equation $F(z, y, t) = 0$ there corresponds a fixed value $z = \varphi(y^0, t^0)$ of (3). If $z = \varphi(y^0, t^0)$ is asymptotically stable as $\tau \rightarrow \infty$ for some set of variation of y^0, t^0 then the solution of the problem with initial conditions

$$z \Big|_{t=t_0} = z^0, \quad y \Big|_{t=t_0} = y^0,$$

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ACCESSION NR: AP3003357

in some interval $t^0 < t < T^0$ tends to a definite limit which is a solution of (1) for $\mu = 0$. Similarly for $\tau \rightarrow \infty$. (These are called the asymptotically stable case.) The author investigates the passage to the limit for the Cauchy problem in her first chapter. In the case of an asymptotically stable singular point there is a passage to the limit not only for the Cauchy problem, but for other problems as well, i.e. the two point boundary value problem, the many point boundary value problem, the problem with mobile boundaries and the problem of periodic solution. The author investigates these problems in her second chapter. If the fixed value $z = \varphi(y^0, t^0)$ of (3) is a saddle point then the solution of the Cauchy problem with arbitrary initial data not depending in any special manner on μ will not in general tend to the solution of (1) with $\mu = 0$ corresponding to the given $\varphi(y, t)$. In this case we have the problem of determining special initial values not generally depending on μ for which the passage to the limit always takes place. However the solution determined by the given fixed z^0, y^0 will either tend to the solution of (1) with $\mu = 0$ corresponding to some other asymptotically stable value of (3) or will go to infinity. Rather than investigate the Cauchy problem, the author imposes initial conditions in another given manner for which the passage to the limit ($\mu = 0$) corresponding to a saddle point is assured. She calls this the hyperbolic case, and investigates it in her third chapter. Orig. art. has: 224 formulas.

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L 12366-65 ENT(d) Pg-4 IJP(c)/ASD(d)/ESD(dp) MLK

ACCESSION NR: AT4047146

S/0000/64/000/000/0183/0191

AUTHOR: Vasil'yeva, A. B. (Moscow); Butuzov, V. F. (Moscow) *B*

TITLE: Asymptotics of the solution of an integro-differential equation with a small parameter multiplying the derivative

SOURCE: Chislenny*ye metody* resheniya differentsial'ny*kh i integral'ny*kh uravneniy i kvadraturny*ye formuly* (Numerical methods of solving differential and integral equations and quadrature formulas); sbornik statey. Moscow, Izd-vo Nauka, 1964, 183-191

TOPIC TAGS: integrodifferential equation, asymptotic solution, Cauchy problem

ABSTRACT: A study is made of the Cauchy problem for the integro-differential equation

$$\mu \frac{dy}{dt} = F(y, \int_0^t K(t,x)y(x)dx, t), \quad y(0) = y^0, \quad (1)$$

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L 12356-65

ACCESSION NR: AT4047146

where μ is a small parameter and an independent variable. Setting $\mu = 0$ in equation (1), a degenerate equation is obtained. Under the assumptions that solutions $y(t, \mu)$ of equation (1) and $\bar{y}_0(t)$ of the degenerate equation exist and satisfy certain conditions, it is proved that the passage to the limit

$$\lim_{\mu \rightarrow 0} y(t, \mu) = \bar{y}_0(t) \quad (0 \leq t \leq T) \quad (2)$$

exists. Asymptotic formulas for the uniform approximation of $y(t, \mu)$ with arbitrary accuracy are constructed on the basis of methods developed previously by A. N. Tikhonov and A. B. Vasilyeva (Matematicheskiy sbornik, v. 22, no. 2, 1948, 193-204; v. 60, no. 1, 1960, 43-58; and Uspekhi matematicheskikh nauk, v. 18, no. 3, 1963, 15-86) for the solution of ordinary differential equations with a small parameter multiplying the derivative. These formulas are valid on the entire interval $0 \leq t \leq T$; that is, even in the neighborhood of the initial point $t = 0$, where the solution of the degenerate equation does not satisfy the initial condition of equation (1) and the boundary-layer phenomenon takes place. Orig. art. has: 17 formulas.

Card 2/3

VASILEVA, A.B. (Moscow); KUTYKO, V.P. (Moscow)

Asymptotic behavior of the solution to an integro-differential
equation containing a small parameter with the derivative.

Zhur. vych. mat. i mat. fiz. 4 no.2 (suppl.):183-191 '62.

(MIRA 18:2)

L 40805-65 ENT(d) Pg-4 IJP(c)
ACCESSION NR: AP4042056

S/0055/64/000/004/0021/0029

AUTHOR: Vasil'yeva, A. B. ; Zimin, A. B.

TITLE: Asymptotic behavior of solutions of some classes of differential equations with a small parameter at the highest derivative

SOURCE: Moscow. Universitet. Vestnik. Seriya 1. Matematika, mekhanika, no. 4, 1964, 21-29

TOPIC TAGS: asymptotic behavior, differential equation, small parameter, highest derivative, degenerate equation

ABSTRACT: The present paper treats the problem of constructing the solution of the differential equation with a small parameter at the highest derivative

$$\mu \frac{dz}{dt} = F(z, t), \quad z|_{t=0} = z^0$$

when the root of the degenerate equation $F(z, t)=0$ is odd-multiple. It is shown that in this case the solution may be represented by its expansion as a series in

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ACCESSION NR: AP4042056

the parameter $\frac{1}{2m+1}$, where $(2m+1)$ is the multiplicity of the root of the degenerate equation $F(z, t)=0$.

ASSOCIATION: None

SUBMITTED: 06May63

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NR REF SOV: 003

OTHER: 000

Card 2/2 *ps*

L 62663-65 EMT(d) LJP(c)

ACCESSION NR: AP5017757

UK/0376/65/001/006/0717/0730

AUTHOR: Vasil'yeva, A. B. 55

TITLE: Integral perturbations in differential equations with rapidly oscillating solutions 11, 55

SOURCE: Differentsial'nyye uravneniya, v. 1, no. 6, 1965, 717-730

TOPIC TAGS: differential equation, integral equation, perturbation

ABSTRACT: Using a modification of the so-called VBK method; see E. Kamke (Spravochnik po obyknovennym differentsial'nyim uravneniyam, IL, M., 1950, str. 209), the author proves the following: Consider the equation

$$\mu^2 y'' + Q^2(x)y = \int_0^x K(x,t)y(t)dt + f(x) \quad (1)$$

and set up the Cauchy problem

$$y(0) = y^0, \quad y'(0) = y'. \quad (2)$$

Theorem. Expression

$$Y_k = \alpha \left[A_k(x, \mu) e^{\frac{i}{\mu} \int_0^x Q dx} + C_k(x, \mu) \right] + \beta \left[\bar{A}_k(x, \mu) e^{-\frac{i}{\mu} \int_0^x Q dx} + \bar{C}_k(x, \mu) \right] + B_k(x, \mu) \quad (3)$$

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in which α and β are defined from

$$y' = \alpha \left[A_k(0, \mu) + C_k(0, \mu) + \frac{i}{\mu} A_k(0, \mu) Q(0) \right] + \beta \left[\bar{A}_k(0, \mu) + \bar{C}_k(0, \mu) - \frac{i}{\mu} \bar{A}_k(0, \mu) Q(0) \right] + B_k(0, \mu), \quad (4)$$

represents a solution $y(x, \mu)$ of the Cauchy problem (2) for equation (1) with asymptotic accuracy μ^{k+1} , i.e.,

$$|y(x, \mu) - Y_k| < C \mu^{k+1}, \quad (5)$$

where C does not depend on x and μ for $\mu \leq \mu_0$ and $0 \leq x \leq 1$. Consider

$$\mu^3 y'' + \Lambda^2 Q^2(x) y = \int_0^1 K(x, t) y(t) dt, \quad (6)$$

Theorem. Suppose in equation (6) $\mu = \frac{1}{\pi n} \int_0^1 Q dx$. Then under certain conditions in a neighborhood $\Lambda = 1$ (of order $1/n$) problem (6) has a unique eigenvalue whose

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asymptotic has the form

$$\Lambda = 1 + \Lambda_1 \frac{\int_0^l Q dx}{(\pi n)^2} \quad (7)$$

where Λ_1 is given by

$$\delta = \mu [B_1(l, 1) \sqrt{Q(l)} + (-1)^{n+1} D_1(l) \sqrt{Q(l)} + D_1(0) \sqrt{Q(0)}] = \mu \Lambda_1 \quad (8)$$

The principal term of this eigenvalue is equal to 1. Orig. art. has: 38 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 18Jan65

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NO REF SOV: 013

OTHER: 001

Card 3/3

L 2.3.6-83 ENT(d) LNP(c)
ACC NR: AP6007885

SOURCE CODE: UR/0199/66/007/001/0061/0069

AUTHOR: Vasil'yeva, A. B.; Imanaliyev, M.

ORG: none

TITLE: Asymptotics of solutions of the Cauchy problem for an integro-differential equation with a small parameter multiplying the derivative

SOURCE: Sibirskiy matematicheskiy zhurnal, v. 7, no. 1, 1966, 61-69

TOPIC TAGS: Cauchy problem, integro differential equation, asymptotic solution

ABSTRACT: The behavior of solutions $y(x, \mu)$ when $\mu \rightarrow 0$ of the Cauchy problem for the integro-differential equation

$$\mu y' + P(x)y = \bar{\lambda} \int_0^x K(x, t)y(t)dt, \quad (1)$$

$$y(0) = y^0, \quad (2)$$

where $\mu > 0$ is a small parameter, is studied under the assumption that $P(x)$ and $K(x, t)$ are continuous on the intervals $0 < x < 1$, $0 < t < 1$,

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UDC: 517.948.34

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ACC NR: AP6007885

and $P(x) > 0$. It is shown that the problem (1)-(2) under certain conditions of smoothness of $P(x)$ and $K(x,t)$ has solutions which tend at $\mu \rightarrow 0$ to a certain linear combination of the form

$$A_1 \varphi_1(x) + \dots + A_m \varphi_m(x), \quad (3)$$

where $\varphi_1(x), \dots, \varphi_m(x)$ are eigenfunctions of equation (1) when $\mu = 0$, and A_1, \dots, A_m are certain unknown coefficients. A procedure is presented for determining their value. The asymptotics of the solutions $y(x, \mu)$ with the remainder term of the μ^{n+1} order is constructed. The asymptotic behavior of the solutions of the Cauchy problem for the non-homogeneous equation

$$\mu y' + P(x)y = \bar{\lambda} \int_0^1 K(x, t)y(t)dt + f(x). \quad (4)$$

is also considered. The asymptotics of the solution is constructed by means of a method similar to that used in problem (1)-(2). Orig. art. has: 27 formulas. [LK]

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Card 2/2 BK

VASIL'YEVA, A.B.; BUTUZOV, V.F.

Some problems involving eigenvalues for integrodifferential equations containing a small parameter at the leading derivative.
Dif. urav. 1 no.9:1190-1203 S '65. (MIRA 18:10)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, fizicheskii fakul'tet.

VASILYEVA, A. B.

"Granzschichterscheinungen und Schwingungsprozesse fur Gleichungen neutralen Typs mit kleiner Verzogerung."

report submitted for 3rd Conf on Nonlinear Oscillations, E. Berlin, 25-30 May 64.

VASIL'YEVA, A.B.; RODIONOV, A.M.

Application of the method of perturbations to an equation with
delayed argument in the case of a slight delay. Trudy Sem. po
teor. diff. urav. s otklon. arg. 1:20-27 '62. (MIRA 16:12)

KOROBKOV, A.Ye.; VASIL'YEVA, A.B.; STOYANOV, G.I.

Mobile device for cleaning petroleum tanks from bottom settlements.
Transp. i khran. nefti i nefteprod. no.7:25-27 '65. (MIRA 18:9)

1. Nauchno-issledovatel'skiy institut po transportu i khraneniyu
nefti i nefteproduktov.

L 13487-66 EWT(d) IJP(c)

ACC NR: AP6001378

SOURCE CODE: UR/0376/65/001/009/1190/1203

AUTHORS: Vasil'yeva, A. B.; Butozov, V. F.

ORG: Moscow State University im. M. V. Lomonosov, Physics Faculty (Moskovskiy gosudarstvennyy universitet, fizicheskiy fakul'tet)

TITLE: Problems on eigenvalues for integro-differential equations with small parameter for higher derivative

SOURCE: Differentsial'nyye uravneniya, v. 1, no. 9, 1965, 1190-1203

TOPIC TAGS: differential equation, integral equation

ABSTRACT: The Cauchy problem for a first order integro-differential equation is considered,

$$\mu \frac{dy}{dx} + A(x)y = \lambda \int_0^1 K(x, t)y(t)dt, \quad (1)$$

with 0 initial condition

$$y(0) = 0. \quad (2)$$

Here $\mu > 0$ is a small parameter, λ is a complex parameter. The relation between the eigenvalues and eigenfunctions of

16, 44, 55

$$A(x)y = \lambda \int_0^1 K(x, t)y(t)dt \quad (3)$$

Card 1/2

L 13487-66

ACC NR: AP6001378

is investigated, and also those of (1), (2). There is an analogous study for

$$\mu^2 \frac{d^2 y}{dx^2} - A^2(x) y = \lambda \int_0^1 K(x, t) y(t) dt, \quad (4)$$

$$y(0) = 0, \quad y(1) = 0. \quad (5)$$

Orig. art. has: 31 formulas.

SUB CODE: 12/ SUBM DATE: 13Apr65/ ORIG REF: 003/ OTH REF: 001

Card 2/2

12

CA

Neutralization of edible fats. A. Rabinovich and A. Vasil'eva. *Mysnaya Ind. S. S. R. O.* No. 8, 24.5 (1958). *Chimie & Industrie* 41, 1183. NaOH solns. give better results than Na_2CO_3 and especially than NaHCO_3 . The fat is melted at 50° , 3% NaCl is added and the necessary quantity of 2% NaOH soln. (a slight excess over the amt. required to neutralize the acidity), and the mixt. is kneaded for 30 min. at 50° . After allowing to stand the lower layer is drawn off and the neutralized fat is washed first with salt soln. and then with distd. water. A. P. C.

ASD-51A METALLURGICAL LITERATURE CLASSIFICATION

Using sulfuric acid as catalyst in making drying oils from castor oil. G. Shurayev and A. Vaul'eva. *Mashinobudo Zhurnal* 1959, No. 2, 40-41. The dehydrating castor oil to make a drying oil, H_2SO_4 is an active catalyst, 0.5% by wt. suffices. The resulting drying oil has a low acid no. (2.7-8.2); its color (ashum for scale) is from 3.0 to 4.0. Drying is somewhat slower than with linseed oil. The film is not harmed by 5% Na_2CO_3 soln. in 2 hrs. at 20°. The complete conversion from raw castor oil to a drying oil takes not more than 6 hrs. Julian P. Smith

BC

B-2-7

PROCESSES AND PROPERTIES INDEX

Preparation of "salt" drying oils from acid
custer oil. G. RICHYANV AND A. VASILIEVA (Mas-
lob. Shiz. Delo, 1969, No. 5, 38).—The oil, containing
26–40% of free acids, is heated with 0.5% of H_2SO_4
(40 min. at 180°, then 4–5 hr. at 230°), the product is
saponified with $NaOH$, and an equal vol. of unsaponi-
fied product is added, followed by $CaCl_2$ to ppt. Ca
soaps of unsaturated acids. The ppt. is collected,
washed, and dried at 130°; it dissolves readily in
turpentine at 110–120° to afford high-quality drying
oil. R. T.

ASH-51A DETAILURGICAL LITERATURE CLASSIFICATION

GROUPS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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VASIL'eva, A.

27

CA

Analysis of castor-oil soapstock. G. Shuray and A. Vasil'eva. Masloboina Zhirove Delo 15, No. 6, 27 (1938).
 The usual methods of detn. of free and combined fat acids in castor-oil soapstock cannot be used because the oil is sol. in alc. and insol. in Et_2O . Satisfactory results can be obtained by the following method: To 5 g. of soapstock in a porcelain evapg. dish add a min. of H_2O (5 ml.), heat, with stirring, on a water bath and neutralize with dil. NaOH . To convert the Na soap into insol. Ca salts, introduce dropwise 10% CaCl_2 until the formation of a milky soln. stops and the bottom aq. layer becomes entirely clear. Evap. to dryness, work up with hot alc., filter, wash the ppt. in the filter with alc. and det. neutral castor oil in the filtrate as usual. Det. combined fat acids from the difference of the total content of fat acids, detd. in the usual manner, and the neutral oil. Chas. Blanc

B-2-7

**Parallel esterification and dehydrochlorination of
ester oil of high acidity.** G. I. SCHURANOV and
A. F. VASILEVA (From. Org. Chem., 1940, 7, 34-36).
Glycerol (1 g.-mol.) is added to ester oil fatty acids
(3 g.-mole) at 80°, followed by H₂O (0.5 g.-mol.).
and the mixture is heated. Foaming is observed at
100-220° (elimination of H₂O), and again at 280-
300° (elimination of HCl). The oil obtained after
3-5 hr. at 100-220° is suitable for use as drying oil.
R. T.

Obtaining drying oil from castor oil with high acidity
 G. Shumay and A. Vasil'eva. *Appl. Sci. Res. Ind. Chem. USSR*
 10, No. 2, 16 (1960), cf. *C. A.* 53, 19881, 34, 2194P
 Castor oil was sepd. from the soapstock and then treated
 with glycerol at 225-80° for about 6 hrs. until the acidity
 was reduced from 21 to 6.3 mg. KOH/g. The esterification
 is accompanied by dehydration and partial polymeriza-
 tion; this gives drying oil comparable to the product ob-
 tained from standard oil. Equally good results were ob-
 tained with castor oil with the acidity 98 and 141 mg
 KOH/g. Chav. Hlanc

ASM-AIA METALLURGICAL LITERATURE CLASSIFICATION

26

Producing drying oils from cottonseed oil by selective saponification. G. I. Shuraev and A. Yasil'eva. *Mashinostroyeniye* Prom. 16, No. 5.6, 32-3 (1910). By saponifying cottonseed oil with insufficient alkali the soaps of unsatd. acids are obtained first. The acids from these soaps, when reesterified with glycerol, form an oil which dries in about 3 days. With driers the oil dries in 2 days, with some residual tackiness. When baked, its through-drying time is 25 min. at 100°. The I no. of this oil is about 128. The satd. oil left by selective sapon. is excellent for soap making. Ivan P. Smith

FEOKISTOV, Aleksandr Mikhaylovich; VASIL'YEVA, Aleksandra Fedorovna;
CHIRKOVA, A.N., retsenzent; BOGATAYA, L.M., red.; KISINA,
Ye.I., tekhn. red.

[Establishing the level of mechanization and automation of
production operations in the dairy industry] Raschet urov-
nia mekhanizatsii i avtomatizatsii proizvodstvennykh pro-
tssessov v molochnoi promyshlennosti. Moskva, Pishcheprom-
izdat, 1963. 26 p. (MIRA 16:6)

(Dairy industry--Equipment and supplies)
(Automation)

VASIL'YEVA, Anastasiya Fedorovna; DOLGOPYATOV, Yu.A., red.; ZLOBIN, M.V.,
tekhn. red.

[Twenty years of work as a calf raiser] 20 let raboty teliatnitsei.
Alma-Ata, Kazakhskoe gos. izd-vo, 1956. 17 p. (MIRA 11:7)

1. Starshaya telyatnitsa kolkhoza imeni Karla Marksa, Iliyaskogo
rayona, Alma-Atinskoy oblasti (for Vasil'yeva).
(Kazakhstan--Calves)

PODOL'SKIY, I. K.; VASIL'IEVA, A. F.

Stock and Stockbreeding

Pasture fattening livestock on a collective farm. Dost. Sel'khoz. No. 3, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. UNCLASSIFIED.

MASTI'YEN, A. I.

"Treatment of Hypertension with Mefenol. In: Mefenol. 1963. 301, All-Union Inst. of Chemical Technology, Moscow, 1963.
(RENSI, No 1, Sep 54)

SC: Sub 100, 20 for 55

VASIL'YEVA, A.G., kandidat meditsinskikh nauk (Moskva)

Use of lipocaine in some forms of diabetes mellitus. Klin. med. 32
no.7:24-29 J1 '54. (MLRA 7:8)

1. Iz kliniki Vsesoyuznogo instituta eksperimental'noy endokrinologii
(dir.-prof. Ye.A.Vasyukova)

(DIABETES MELLITUS, therapy

*pancreatic extract lipocaine)

(PANCREAS

*extract lipocaine, ther. of diabetes mellitus)

VASIL'YEVA, A.G., kandidat meditsinskikh nauk, (Moskva)

Investigations of higher nervous activity in thyrotoxicosis.
Probl. endokr. i gorm. Moskva 1 no.3:46-65 My-Je '55.

(MLRA 8:10)

1. Iz kliniki Vsesoyuznogo instituta eksperimental'noy
endokrinologii (dir.-prof. Ye. A. Vasiyko)

(CENTRAL NERVOUS SYSTEM, in various diseases,
hyperthyroidism, higher nervous funct. tests)

(REFLEX, CONDITIONED,
higher nervous funct. tests in hyperthyroidism)

(HYPERTHYROIDISM physiology,
higher nervous funct. tests)

... accompanied by an ...
per day are non-toxic ...
corticoid is superior to methylthiouracil in that, given pre-
operatively, it does not induce excessive bleeding like methyl-
thiouracil. J. A. Sisto

VASYUKOVA, YE. A., VASIL'YEVA, A. G., FLYAGETSKIY, N. R.

"The Condition of the Cardio-Vascular System in Itsenko Cushing Disease."

Theses of the Proceedings of the Annual Scientific Sessions 23-26 March 1959
(All-Union Institute of Experimental Endocrinology)

From the clinical department of the All-Union Institute of Experimental
Endocrinology (Director--Professor Ye. A. Vasyukova)

BIRICH, T.V., prof.; VASIL'YEVA, A.G., kand.med.nauk

Successful treatment of a patient with tuberculosis of the eyes,
hematogenous pulmonary tuberculosis, and ankylosing tuberculous
polyarthrititis. Zdrav. Belor. 5 no.9:62-64 S '59. (MIRA 12:12)

1. Iz kliniki glaznykh bolezney Minskogo meditsinskogo instituta.
(TUBERCULOSIS)

VASIL'YEVA, A.G.; EGART, F.M.

Endocrine disorders in sprue and sprue-like syndromes. Probl.
endok. i gorm. 10 no.1:46-50 Ja-F '64.

(MIRA 17:10)

1. Klinika Vsesoyuznogo instituta eksperimental'noy endokrinologii
(dir. - prof. Ye.A. Vasyukova), Moskva.

L 29838-66 EWT(d)/EWT(m)/EWP(v)/T/EWP(t)/ETI/EWP(k) IJP(c) JD/GD
 ACC NR: AT6017919 (N) SOURCE CODE: UR/0000/65/000/000/0031/0035 57
 AUTHOR: Vasil'yeva, A. G. (Candidate of technical sciences) 58
 ORG: none E+1
 TITLE: Niobium-base spring alloys 6
 SOURCE: Leningradskiy dom nauchno-tekhnicheskoy propagandy. Povysheniye
 nadezhnosti pruzhin (Increasing the reliability of springs); sbornik. Leningrad, 1965,
 31-35 14 17
 TOPIC TAGS: niobium base alloy, titanium containing alloy, aluminum containing
 alloy, spring, strain hardening, elasticity, hardness, annealing, stress
 relaxation, heat resistant alloy
 ABSTRACT: Two niobium-base alloys, one containing 10.5% titanium and another
 2.1% aluminum, were vacuum rolled into 0.3-mm thick strips with total reductions of
 10 and 85—90% (niobium-titanium alloy) or 10% (niobium-aluminum alloy). The strip
 specimens were tested for elastic properties in the as-rolled and annealed (at
 700—900C) conditions. The niobium-titanium alloy as-rolled with 10 or 85—90% re-
 duction had a hardness of 285 or 338 HV (235 HV prior to rolling), an elasticity
 limit of 33 or 36 kg/mm², and an elasticity modulus of 10,000 and 9600 kg/mm². The
 as-rolled niobium-aluminum alloy had a hardness of 360 HV (270 HV prior to rolling),
 an elasticity limit of 304 kg/mm², and an elasticity modulus of 9300 kg/mm². The slight decrease of the elasticity
 modulus was
 Card 1/3

L 29838-66

ACC NR: AT6017919

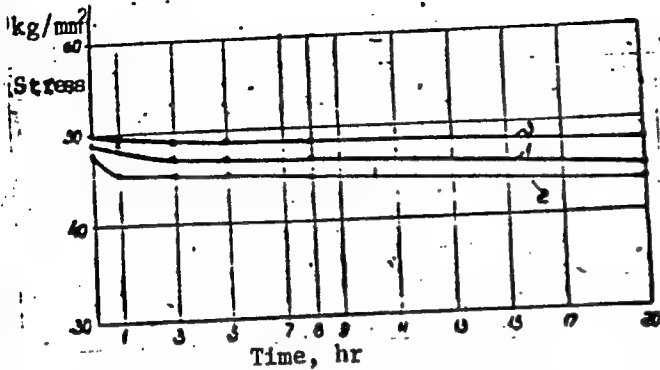


Fig. 1. Stress relaxation at 400C in Nb-Al alloy.

1 - Annealed at 800C; 2 - at 850C; and 3 - at 900C.

modulus of niobium-titanium alloy after higher reduction was probably associated with the formation of a texturized structure and an increased density of defects. Annealing at a temperature which produced polygonization (700—900C for Nb-Ti alloy and 800—900C for Nb-Al alloy) increased the elasticity limit of Nb-Ti alloy rolled with reductions of 10 or 85% to 65.0—67.9 kg/mm² or to 54.5—70.7 kg/mm², and that of Nb-Al alloy to 64.5—68.5 kg/mm². The fine structure produced by annealing had a high thermal stability and a high relaxation strength (see Fig. 1). Nb-10%Ti alloy was found to be oxidation-resistant in air at temperatures up to 500C, and Nb-2.1%Al alloy, up to 400C. Both alloys are promising material for heat-resistant springs.

Card 2/3

L 29858-66

ACC NR: AT6017919

The Nb-9%Ti alloy can be recommended for industrial applications. The alloys are sufficiently ductile and can be rolled into thin strip. To obtain required elastic and relaxation properties, the alloys must be strain hardened and subsequently annealed below the recrystallization temperature. Orig. art. has: 2 figures and 3 tables. [MS]

SUB CODE: 11, 13/ SUBM DATE: 19Oct65/ ATD PRESS: 5013

Card 3/3 fv

VASIL'YEVA, A.G., kand. tekhn. nauk, dotsent

Investigating properties of niobium alloys used for springs.
Izv. vys. ucheb. zav.; mashinostr. no.5:164-170 '65.
(MIRA 18:11)

L (G) (P) (U) EWP(c)/EWP(n)-2/EWP(z)/EWP(m)/EWP(L)/TX/AA(d)/EWP(w)/EWP(t) Pu-4
 ACCESSION NR: AP5016013 15/05/65/000/005/0164/0170
 15.082 24

AUTHORS: Vasil'yeva, A. G. (Candidate of technical sciences, Docent);
 Prokoshkin, D. A. (Professor, Doctor of technical sciences)

TITLE: Investigation of the properties of niobium spring alloys

SOURCE: IVUZ. Mashinostroyeniye, no. 5, 1965, 164-170

TOPIC TAGS: niobium alloy, titanium alloy, aluminum alloy, spring alloy, alloy
 property

ABSTRACT: The elastic relaxation and corrosion resistive properties of Nb-Ti (alloy No. 1: 10.5% Ti, 0.04 Cu, 0.6 W, rest Nb) and Nb-Al (alloy No. 2: 2.1% Al, 0.09 Cu, 0.6 W, the rest Nb) alloys were experimentally determined as a function of heat treating temperature, plastic deformation, and operating temperature. After casting, the alloys were annealed (1500°C for alloy No. 1, 1250°C for No. 2) for 25 hours at ≈ 10 mm Hg (hardness 235 and 270 HV respectively), not rolled (at 1250°C) from 9-2 mm (5-10% per pass), again annealed (at 1250°C) and then cold rolled (5% single pass). Alloy No. 1 was then cold rolled from 2-0.30 mm (85%) with and without intermediate annealing, annealed at 1250°C (1 hour) and finally cold rolled from 0.33 to 0.3 mm. Alloy No. 2 was hot rolled (only 10% because of low plasticity) at 4000°C. The elasticity, elastic limit, and stress relaxation

L 63285-65

ACCESSION NR: AP5016013

were measured as a function of annealing temperature (700-900C for Nb-Ti, 800-900C for Nb-Al) after it was found that the recrystallization temperatures were 1100C (10% deformation) and 950C (85% deformation) for Nb-Ti and 1000C (10%) for Nb-Al alloys. It was found that the elastic modulus for the Nb-Ti alloy was maximum after annealing (for 1/2 hour) at 850C for 10% deformation (10 700 kg/mm) and at 800C for 85% deformation (9700 kg/mm); for Nb-Al the maximum was 10 500 kg/mm after annealing at 800C (10% deformation). The elastic limit was found to be fairly constant over the annealing temperature ranges: Nb-Ti- $\tau_{0.01} \approx 78 \text{ kg/mm}^2$; $\tau_{0.002} \approx 70$; $\tau_{0.005} \approx 74$; Nb-Al-73, 70, 65 kg/mm² respectively. The optimum annealing temperatures for stress relaxation ($\tau_0 = 46-54 \text{ kg/mm}^2$ at 400C) were found to be as follows: Nb-Ti-850C (10% deformation) gave 4.8% relaxation; 850C (85%) gave 4.75%; Nb-Al-900C (10%) gave 3.8%. High temperature oxidation resistance tests showed that Nb-Ti was stable to 500C, Nb-Al to 400C. Orig. art. has: 4 figures and 3 tables.

ASSOCIATION: none

SUBMITTED: 04Apr64

ENCL: 00

SUB CODE: MM

NO REF SOV: 004

OTHER: 001

Card 2/2K

L 10281-66 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) MJW/JD
 ACC NR: AP5027709 SOURCE CODE: UR/0129/65/000/011/0031/0033

AUTHOR: Prokoshkin, D. A.; Vasil'yeva, A. G.; Akimov, V. V.
 44.55 44.55 44.55

ORG: MVTU im. Bauman
 44.55

TITLE: The strength and ductility of alloy steels subjected to low-temperature thermochemical treatment. 44.55

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 11, 1965, 31-33.

TOPIC TAGS: steel, alloy steel, structural steel, steel treatment, heat treatment, thermomechanical treatment, anforming*, steel anforming*, low temperature treatment, steel property/VL1 steel, VL1D steel, VKS1 steel, 40Kh SNVF steel

ABSTRACT: The effect of low-temperature thermomechanical treatment (LTTMT) on the mechanical properties of a series of medium- and high-alloy structural steels has been investigated. Six complex-alloyed steels, VL-1, VL1D, VKS1, 40KhGSNMF, 40KhSNVF, and 40Kh5NSMF, containing 0.3—0.46% C, 1.4—5.2% Cr, 0.81—2.26% Ni, 0—1.5% Mo, 0.55—1.38% Mn, 0.86—1.32% Si, 0—0.8% V, and 0—1.2% W, were austenitized at 900—1030C, cooled to 550—500C, rolled in one, two, and five or ten passes with respective reductions of 20, 40, and over 85% (with reheatings in 5 and 10 pass rolling), oil quenched, and tempered at 200, 250, or 260C. It was found that LTTMT significantly reduced the block size in all the investigated steels. After the LTTMT, the tensile strength of all steels was 60—80 kg/mm² higher than that of conventionally heat-treated steels: from 179 to 225 kg/mm² for

UDC: 620.178:3:669.15-194:66.046

Card 1/2

*Should be anforming

L 10281-66

ACC NR: AP5027709

VL1 steel and from 200 to 276 kg/mm² for 40KhSNV steel. The increases in the yield strength and elongation ranged from 4 to 69 kg/mm² and from 0.5 to 2.2%, respectively. The most significant increase in the tensile strength occurred at low and very high reductions. The elongation increased with increasing reductions up to 60% and decreased with higher reductions. Tempering at temperatures up to 550C does not annihilate the beneficial effect of LTTMT. In all steels after the LTTMT, the ductility was lower (by about 3%) and the resistance to plastic deformation was higher (by 8—13 kg/mm²) in the direction transverse to that of rolling. Orig. art. has: 4 figures and 4 tables. [MS]

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 004/ OTH REF: 001/ ATD PRESS: 4/66

Card 2/2

KHLODYANINA, M.S.; BOCHARENKO, A.I.; NEYMAN, V.B. *Khimiya* 1967

Mechanism of termination of kinetic oxidation of oils by action
of radical stabilizers. Kin. i mek. 6 no. 3. 1967. 10 p. (1967)

1. Institut khimicheskoy fiziki AN SSSR.

L 02983-67 EWT(m)/EWP(w)/T/EWP(t)/ETI/EWP(k) IJP(c) JD/HW

ACC NR: AP6032461

SOURCE CODE: UR/0129/66/000/009/0051/0054

AUTHOR: Prokoshkin, D. A.; Vasil'yeva, A. G.; Akimov, V. V.; Shinkarevich, Yu. B. 52
B

ORG: none

TITLE: Effect of deformation temperature in thermomechanical treatment on mechanical properties and nil-ductility transition temperature of alloyed structural steel

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 9, 1966, 51-54

TOPIC TAGS: structural steel, ^{alloy} steel thermomechanical ^{property}, steel, cryogenic metal working, temperature thermomechanical treatment, ~~at~~ metal heat treatment, steel, solid mechanical property/40Kh5NSMF steel

ABSTRACT: Several series of specimens of 40Kh5NSMF (0.46% C, 5.2% Cr, 1.6% Ni, 1.5% Mo, 0.55% Mn, 1.32% Si, 0.2% V) steel were austenitized at 1050C and subjected to thermomechanical treatment (TMT), rolled at 550—1050C with 50% reduction, quenched and then tempered at 200—300C. The tensile strength and yield strength were found to increase and ductility to decrease with decreasing deformation temperature (see Fig. 1). The NDT temperature dropped with increasing deformation temperature from -20C for steel rolled at 550C to -50C for steel rolled at 800—1050C. The strengthening effect of thermomechanical treatment was not eliminated by repeated hardening. However, the higher the temperature of TMT, the more stable the effect. Repeated hardening with short 5-min austenitizing at 1050C lowered the tensile

Card 1/2

UDC: 621.789:669.14.29

L 02983-67

ACC NR: AP6032461

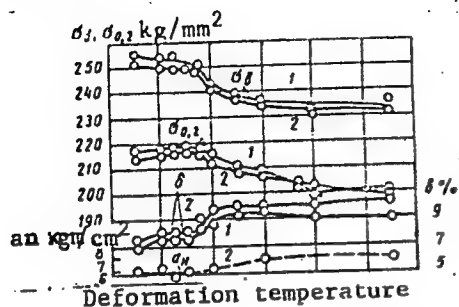


Fig. 1. Effect of deformation temperature on tensile strength (σ_b), yield strength ($\sigma_{0.2}$), elongation (δ), and notch toughness (α_n) of 40Kh5NSMF steel tempered at 200C (1) or 300C (2) after thermomechanical treatment.

strength of steel rolled at 550 and 1050C from 250 and 232 kg/mm² to 215 and 227 kg/mm², respectively. Orig. art. has: 3 figures and 2 tables.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 005/ OTH REF: 001/ ATD PRESS: 5099

Card

2/2 *eqh*

PROKOSHKIN, D.A.; VASIL'YEVA, A.G.; AKIMOV, V.V.

Strength and plasticity of alloyed steels following a low-
temperature thermomechanical treatment. Metalloved. 1 term.
obr. met. no.11:31-33 N '65. (MIRA 18:12)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana.

KHLOPLYANKINA, M.G.; BUCHACHENKO, A.L.; VASIL'YEVA, A.G.; NEYMAN, M.B.

Temperature dependence of cage effect in liquid-phase reactions. Izv.
AN SSSR. Ser. khim. no.7:1296-1298 '65. (MIRA 18:7)

1. Institut khimicheskoy fiziki AN SSSR.

L 59530-65 ENT(m)/EPF(c)/ENG(m)/ENP(j)/T Pc-4/Pr-4 RFL DS/WH/RM

ACCESSION NR: AP5016809

UR/C195/65/006/003/0394/0398

541.124 : 542.943

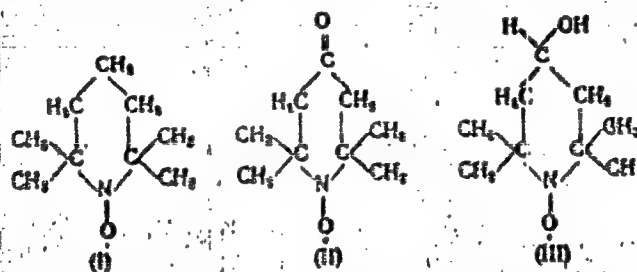
AUTHOR: Khlop'yankina, M. S.; Buchachenko, A. L.; Neyman, M. B.; Vasil'yeva, A. G.

TITLE: Mechanism of termination of kinetic oxidation chains by radical stabilizers

SOURCE: Kinetika i kataliz, v. 6, no. 3, 1965, 394-398

TOPIC TAGS: kinetics, free radical, radical stabilizer, oxidation, chain reaction

ABSTRACT: Elementary reactions of inhibition of hydrocarbon oxidation with nitrosyl radicals



Card 1/2

L 59530-65

ACCESSION NR: AP5016809

2

were studied in detail. Effectiveness of termination of kinetic oxidation chains is determined by the competition of nitrosyl radicals and oxygen for R' and RO' radicals, chain carrying species in liquid and solid phase oxidation of individual hydrocarbons and polymers. The ratio of the rate constants of these competing reactions at 60°C is 26 ± 3 for oxidation of ethylbenzene and 1.4 ± 2 for diphenylmethane. Esters of general formula $\nu N-OR$ result from trapping of R' radicals by nitrosyl radicals. Nitrosyl radicals are useful as radical monitors in determining the rate of initiation of radical-type polymerization and also in studying the cage-effect in the liquid phase radical-type reactions. "In conclusion the authors thank V. Ya. Shlyapintokh for help and interest in the work." Orig. art. has: 1 table, 3 figures, 3 formulas.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 23Nov63

ENCL: 00

SUB CODE: GC

NO REF SOV: 010

OTHER: 002

llc
Card 2/2

ZAKHAROVA, N.V.; LIAKUMOVICH, A.G.; PARFENENKOVA, L.R.; VASIL'YEVA, A.G.

Basic regularities of the reaction of isoamilenes with sulfuric acid. Khim. i tekhn. topl. 1 masel 9 no.9:18-22 S '64.
(MIRA 17:10)

1. Sterlitamakskiy zavod SK.

LUKOVNIKOV, A.F.; FEDOROV, B.P.; VASIL'YEVA, A.G.; KRASNANSKAYA, E.A.;
LEVIN, P.I.; GOL'DVARE, Ya.L.

Benzimidazole derivatives as inhibitors of the oxidation
of polypropylene and the effect of p-hydroxydiphenylamine
on their effectiveness. Vysokom. soed. 5 no.12:1785-1789
D '63. (MIRA 17:1)

1. Institut khimicheskoy fiziki AN SSSR i Institut
organicheskoy khimii im. N.D. Zelinskogo AN SSSR.

ACCESSION NR: AP4010078

S/0129/64/000/001/0055/0056

AUTHOR: Vasil'yeva, A. G.

TITLE: The effect of ultrasonic oscillations on the hardenability of steel

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 1, 1964, 55-56

TCPIC TAGS: ultrasonic oscillations, magnetostriction converter, magnetostriction vibrator, case hardening, martensite, sonic treatment, wave guides, steel hardening

ABSTRACT: An investigation into the effect of ultrasonic oscillation on the hardenability of steel involved the use of an 800-watt "BAR" generator, while a magnetostriction converter made of nickel was used as a vibrator. The wave-guide samples, all made of the same material, measured 130 mm in length, which is the equivalent of $3/4$ wavelength of the basic harmonic of the magnetostriction vibrator. Ultrasonic oscillation improves the hardenability of steel when applied during the cooling

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ACCESSION NR: AP4010078

process. It is possible that these oscillations slow the cooling process by releasing heat during the change from mechanical oscillation energy to thermal energy. A micro-structural analysis revealed that the processed steel samples were not as hard as the control samples, due to the fact that the ultrasonic oscillations increased the size of the austenitic grain which, in turn, enlarged the martensite needles. Ultrasonic oscillation affects the hardenability of steel under any hardening temperature, particularly under an optimum temperature. Orig. art. has: two figures.

ASSOCIATION: MVTU imeni Baumana (The Bauman Moscow Higher Technical School)

SUBMITTED: 00 DATE ACQ: 07Feb64 ENCL: 00

SUB CODE: ML, AP NO REF SOV: 000 OTHER: 000

Card 2/2

VASIL'YEVA, A.G., kand.tekhn.nauk; KOBTSOVA, T.Ye., inzh.

Effect of ultrasonic waves on the grain size in austenite and
peralite. Metalloved. i term. obr. met. no.9:22-23 3 '62.
(MIRA 16:5)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana.
(Ultrasonic waves--Industrial applications) (Steel--Metallography)

KHLOPLYANKINA, M.S.; LUKOVNIKOV, A.F.; LEVIN, P.I.; Primalni uchastiye:
VASIL'YEVA, A.G.; BULGAKOVA, T.A.

Increased effectiveness of the combined action of antioxidants
(synergism). Part 2: Basic manifestations of the effect of anti-
oxidant mixtures. Vysokom.sped. 5 no.2:195-200 F '63. (MIRA 16:2)

1. Institut khimicheskoy fiziki AN SSSR.
(Antioxidants)

S/129/62/000/009/004/006
E073/E435

AUTHORS: Vasil'yeva, A.G., Candidate of Technical Sciences,
Kobtseva, T.Ye.

TITLE: Influence of ultrasonic oscillations on the size of
austenite and pearlite grains .

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov,
no.9, 1962, 22-23. + 1 plate

TEXT: The influence of ultrasonics (21 kc/s) on the proneness
of austenite grains to grow and to decompose was studied on
Steel 45. The specimens were hardened or normalized at various
temperatures with holding times of 30 min, each experiment being
conducted with and without the ultrasonic treatment; the
specimens were tuned to the resonance frequency. To prevent
decarburization, the specimens were heated in a salt bath.
The ultrasonics were applied during heating (from 650°C onwards),
holding and subsequent cooling. After the heat treatment,
hardness measurements were taken, the microstructure examined
and the grain size determined.

Conclusions: Ultrasonic treatment applied during heating brought
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Influence of ultrasonic ...

S/129/62/000/009/004/006
E073/E435

about a coarsening of the austenitic grain leading to the formation of coarse acicular martensite; application of ultrasonics during the cooling, when austenite is transformed into pearlite, caused refining of the pearlite grain. There are 3 figures.

ASSOCIATION: MVTU imeni Bauman

Card 2/2

LEVIN, E.D.; VASIL'YEVA, A.G.

Analysis of sodium phenolates produced in dephenolizing units.
Koks i khim. no.9:50-52 '61. (MIRA 13:1)

1. Magnitogorskiy metallurgicheskiy kombinat.
(Sodium phenoxide--Analysis)

SOV/137-57-11-22350 D

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 11, p 244 (USSR)

AUTHOR: Vasil'yeva, A.G.

TITLE: An Investigation of the Ductility and Strength of Steel in the Recrystallization Interval (Issledovaniye plastichnosti i proch-nosti stali v intervale perekristallizatsii)

ABSTRACT: Bibliographic entry on the Author's dissertation for the de-gree of Candidate of Technical Sciences, presented to the Mosk. vyssh. tekhn. uch-shche (Moscow Higher Technical School), Moscow, 1957

ASSOCIATION: Mosk. vyssh. tekhn. uch-shche (Moscow Higher Technical School), Moscow

Card 1/1

SOV/137-58-11-23463

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 232 (USSR)

AUTHORS: Pogodin-Alekseyev, G. I., Vasil'yeva, A. G.

TITLE: The Strength and Ductility of Steel in the Range of Recrystallization
(Prochnost' i plastichnost' stali v intervale perekristallizatsii)

PERIODICAL: V sb.: Term. obrabotka i prochnost' metallov i splavov. Moscow, Mashgiz, 1958, pp 53-64

ABSTRACT: Tension tests were performed on specimens of steels St 20, 35, 45, and U8 at temperatures ranging from 650 to 900°C (in 10-30° increments) in order to refine existing data on the reduction of the plasticity of steel in the vicinity of critical points. Two procedures were employed for the heating of the specimens: a) Direct heating to the required temperature; b) heating to 980° followed by controlled cooling until the desired temperature was attained. Certain anomalies in the ductility of steel were observed in the range of recrystallization; in particular, a significant increase in magnitude of δ , followed by a sharp decrease. These phenomena are connected with processes of hardening and recrystallization of the austenite. Bibliography: 9 references.

Card 1/1

T. F.

POGODIN-~~ALEKSEYEV~~, G.I.; VASIL'YEVA, A.G.

Methods for determining localized and uniform plasticity under
tensile stress. Zav.lab. 24 no.11:1394-1395 '58.

(MIRA 11:12)

(Metals--Testing) (Plasticity)

VASIL'YEVA, A. G., Cand. Tech. Sci.; POGODIN-ALEKSEYEV, G. I. (Dr. Tech. Sci.);

"Strength and Plasticity of Steel in the Recrystallization Temperature Range,"
Termicheskaya obrabotka i prochnost' metallov i spлавov; sbornik statey
(Heat Treatment and Strength of Metals and Alloys; Collection Articles) Moscow,
Mashgiz, 1958, 177 p.

The authors describe anomalous changes in strength and plasticity which occur
during the recrystallization temperature range.

14(11), 7(6)
AUTHORS:

SOV/32-24-11-23, '37
Pogodin-Alekseyev, G. I., Vasil'yeva, A. G.

TITLE:

Methods of Determining Localized and Uniform Plasticity in
Extension (O metodike opredeleniya lokalizovannoy i ravnomer-
noy plastichnosti pri rastyazhenii)

PERIODICAL:

Zavodskaya Laboratoriya, 1958, Vol 24, Nr 11, pp 1394-1395
(USSR)

ABSTRACT:

One of the most common methods of measuring plasticity is the
method of applying graduation grids, which was developed best
by T. K. Zilova and Ya. B. Fridman. In some cases, however,
as e. g. at high temperatures, this method cannot be applied.
One of the authors of the study under review had already sug-
gested (Ref 1) a simple method of determining plasticity under
any static testing conditions including high temperatures.
This method consists of measuring a graduation on the sample,
which was applied after testing, or of measuring the diameter
only of various cross-sections of the sample (after testing)
at certain distances from the point of failure. In order to
plot the diagrams of distribution of plasticity on the sample
before testing, the initial length of each segment between the

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SOV/32-24-11-23/37

Methods of Determining Localized and Uniform Plasticity in Extension

lines of calibration of the neighboring cross-sections is computed. The diameter is determined by means of an equation. This method was verified with samples of low-carbon plastic steel 20 of a diameter of 6 mm and a length of 30 mm. The lines of calibration (0.1 mm) were applied by means of a , ' graduating machine in intervals of 2 mm. Measuring was carried out by means of a microscope. It is noted that this method of computation facilitates an exact estimation of the distribution of plastic deformation in the sample and that the maximum of plasticity can be observed very accurately. There are 1 figure, 2 tables, and 1 Soviet reference.

Card 2/2

VASIL'YEVA, A.G. Cand Tech Scie -- (diss) "Study of the plasticity and stability of steel in the interval of recrystallization."
Mos, 1957. 15 pp 21cm. (Min of Higher Education USSR. Mos Order of Lenin and Order of Labor Red Banner ~~Advanced~~ Higher Technical School im Bauman.) 100 copies. (KL, 23-57,112)

-51-
H

VASIL'YEVA, A. G. Cand Med Sci -- (diss) "Treatment of ~~victims of~~ metastatic
eye tuberculosis *patients with* ~~of the eye by~~ streptomycin and *its use in combination* ~~the combined application of it~~ with
oxygen and PASK [Paraaminosalicylic acid] Minsk, 1957. 18 pp 22 cm.
(Minsk State Med Inst), 200 copies (XL, 24-57, 120)

-71-

VASILYEVA, A. G.

USSR / Pharmacology, Toxicology. Chemotherapeutic Agents.

U-7

Abs Jour : Ref. Zh.-Biol., No 2, 1956, No 8166

Author : Vasilyeva, A. G.

Inst :

Title : Combined Streptomycin - PAS Therapy in Metastatic Tuberculosis of the Eyes.

Orig Pub : Zdravookhr. Belorussii, 1957, No 3, 39-42.

Abstract : Thirty-nine patients with metastatic tuberculosis of the eyes were given streptomycin and PAS according to the following method. A 50 ml solution of a calcium chloride complex of streptomycin, containing 50,000 units in 1 ml of physiologic saline was applied daily to the bulbar conjunctiva following 3 instillations of a 0.5% dicaine solution into the conjunctival sac; 1-2 g of PAS were given

Card : 1/2

~~VASILEVA~~ VASILYEVA A.G.

EXCERPTA MEDICA Sec.12 Vol.12/4 Ophthalmology April 58

693. COMBINED ADMINISTRATION OF STREPTOMYCIN AND OXYGEN IN THE TREATMENT OF SEVERE FORMS OF METASTATIC OCULAR TUBERCULOSIS (Russian text) - Vasileva A. G. - ZDRAV. BELO-RUSSII 1956, 8 (34-37)

Combined treatment with streptomycin and oxygen was applied in 52 patients (83 eyes) as follows. Anaesthesia of the conjunctiva was effected by instillation of 0.5 dicaine solution applied 3 times. The oxygen was introduced under the conjunctiva until a distinct small cushion formed (0.7-1 ml.); streptomycin 25,000 U. was introduced in 0.5 ml. of solution. The injections of oxygen were alternated with streptomycin every other day. In early forms of tuberculous uveitis (8 patients), choroidoretinitis and maculitis (2 patients) a good result was obtained in all cases; in chronic tuberculous uveitis (15 patients) a good result was achieved in 8 cases, a satisfactory one in 6 and some little improvement in one; in chronic tuberculous choroidoretinitis and maculitis (15 patients) a good result was obtained in 5 patients, a satisfactory one in 4, a slight one in 5, and no improvement in one; in haemorrhagic forms (12 patients) the result was good in 4 and satisfactory in 7, with a slight improvement in one. The duration of the disease was: in 13 cases up to 3 months, in 6 cases 3-12 months, in 13 cases 1-2 years, in 7 cases 2-5 years, and in 13 cases over 5 years. The author points out that the process of resorption of precipitates turbidity and haemorrhages in the vitreous, and of haemorrhagic foci in the fundus, of exudates and tubercles proceeds more quickly when combined oxygen-streptomycin therapy is instituted than when streptomycin alone is administered. Combined oxygen-streptomycin therapy is effective both in exudative and haemorrhagic forms of metastatic ocular tb and also in diffuse chorioneroretinitis, maculitis and uveitis with intensive turbidity of the vitreous. (S)

Category : USSR/Solid State Physics - Mechanical properties of crystals and poly-crystalline compounds E-9

Abs Jour : Ref Zhur - Fizika, No 1, 1957 No 1367

Author : Pogodin-Alekseyev, G.I., Vasil'yeva, A.G.

Title : On the Connection Between the Size of the Grain of the Microstructure, the Form of the Fracture, and the Impact Viscosity of Steel.

Orig Pub: *Trudy MTU, No. 70 31-35, 1956*
Critical remarks concerning statements made by V.D. Sadovskiy, K.A. Malyshev, and B.G. Sazonov (Referat. Zh. Fizika, 1955, 6962) that recrystallization of steel is not necessarily related to the phase transformations, occurring in the transition through the Ac_1 -- Ac_3 interval. The authors made a special investigation of specimens of overheated and carbon steel (0.65% C, 0.90% Mn, 0.54% Si, 0.012% S, 0.031% P), which showed a large grain and a coarse crystalline fracture after heating to 1150° for 30 minutes and cooling in air. The specimens were subjected to a repeated normalization in the temperature range from 700 to 1000° in steps of 50°. It turned out that the reduction in the grain and in the structure of the fracture is not attained simultaneously, and an increase in the impact viscosity is observed at values of normalization temperatures that are not high enough to insure a reduction in the grain of the fracture. The authors conclude that the properties of the steel are

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Category : USSR/Solid State Physics - Mechanical properties of crystals and poly- E-9
crystalline compounds

Abs Jour : Ref Zhur - Fizika, No 1, 1957: No 1367

determined both by the size of the micro-structure grain, as well as by the character of the "crystalline organization," which determines the size of the fracture grain, and that there is no basis for contrasting the Ac_3 point and Chernov's "b" point.

Card : 2/2

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VASYUKOVA, Ye.A., prof.; VASIL'YEVA, A.G., starshiy nauchnyy sotrudnik;
PYASETSKIY, N.R., starshiy nauchnyy sotrudnik (Moskva)

Cardiovascular disorders in the Itsenko-Cushing disease. Probl.
endok.i gorm. 5 no.6:63-76 N-D '59. (MIRA 13:5)

1. Iz kliniki Vsesoyuznogo instituta eksperimental'noy endokrino-
logii (dir. - prof. Ye.A. Vasyukova).
(CUSHING SYNDROME compl.)
(CARDIOVASCULAR DISEASES etiol.)

GOFMAN, M.M., VASIL'YEVA, A.I.; LUBENSKIY, N., red.; TOPOROV, P., tekhn. red.

[Intensified loading of combines on the North Caucasian railroad]
Opyt Severo-kavkazskoi zheleznoi dorogi po uplotnennoi pogruzke
kombainov. Rostov-na-Donu, 1957. 19 p. (MIRA 11:10)

1. Dorozhnoye Nauchno-tekhnicheskoye obshchestvo, gruzovaya sluzhba
Severo-Kavkazskoy zheleznoy dorogi (for Gofman, Vasil'yeva)
(Combines(Agricultural machinery))--Transportation)

VASIL'YEVA, A.I.

Efforts to achieve the planned capacity of the Cheboksary Cotton
Combine. Tekst. prom. 17 no.5:47-50 My '57. (MLRA 10:6)

1. Glavnyy inzhener Cheboksarskogo khlopchatobumazhnogo kombinata.
(Cheboksary--Cotton manufacture)

VASIL'YEVA, A.I.; GLUMOV, A.I.; KHLONINA, N.P.; KOSTINA, T.N.;
ALEKSANDROV, F.T., starshiy nauchnyy sotrudnik, Laureat Gosudarstvennoy
premi

The new factories should be equipped with high-capacity carding
machines. Tekst.prom. 22 no.4:27-29 Ap '62 (MIRA 15:6)

1. Glavnyy inzhener Cheboksarskogo khlopchatobumazhnogo kombinata
(for Vasil'yeva). 2. Nachal'nik novostroyashcheysya pryadil'noy
fabriki No.3 Cheboksarskogo khlopchatobumazhnogo kombinata (for
Glumov). 3. Nachal'nik chesal'nogo tsekha novostroyashcheysya
pryadil'noy fabriki No.3 Cheboksarskogo khlopchatobumazhnogo
kombinata (for Khlonina). 4. Nachal'nik proizvodstvennoy nauchno-
issledovatel'skoy laboratorii Cheboksarskogo khlopchatobumazhnogo
kombinata (for Kostina). 5. Vsesoyuznyy nauchno-issledovatel'skiy
institut legkogo i tekstil'nogo mashinostroyeniya (VNILTekmash)
(for Aleksandrov).

(Carding machines)

DYMKIN, A.M.; VASIL'YEVA, A.I.

Magnesioferrite in the ores of the Tayskaya deposit. Geol. i geofiz.
no.9:126-128 '64. (MIRA 18:7)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR,
Novosibirsk.

DYAKIN, A.M.; VASIL'YEVA, A.I.

Some characteristics of the distribution of impurity elements
in principal ore minerals of the Aleshinsk magnetite deposit
(Turgay trough). Geol. i geofiz. no. 8:75-81 '61. (MIRA 14:9)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR,
Novosibirsk.

(Turgay trough—Mineralogical chemistry)

BOYARSHINA, A.P.; VASIL'YEVA, A.I.; SHARAPOV, V.N.

Genetic characteristics of the Medvezh'ye deposit in the Kaz group of iron ore deposits. Geol. i geofiz. no.2:149-152 '65. (MIRA 18:9)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR, Novosibirsk, i Zapadno-Sibirskoye geologicheskoye upravleniye, Novokuznetsk.

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VASIL'YEVA, A. I.
CA

Liquefaction of clays by soluble glass at temperatures up to 100°. V. P. Kuznetsova and A. I. Vasil'eva. *Otvetny 6*, 941-5 (1938); cf. G. Yu. Zhukovskii and B. P. Subbotin, *Keram. i Steklo* 13, 330 (1928). The liquefaction of slurry obtained from 2 kinds of clay by sol-glass was studied at 20°, 50° and 80° by the aid of a viscometer with coaxial cylinders. Ljubytno clay slurry at contents of 67 and 70% liquefies at 20° better than at 50° or 80°. Latnaja clay at contents of 55 and 57% liquefies at 50° or 80° better than at 20°, because slurry thickens more slowly at 50° and 80° at the min. viscosity.

E. E. Stefanowsky

VASIL'YENKA, A. M.

"Economic Geography of the City of Syzran." Sub 26 Apr 51,
Moscow Oblast Pedagogical Inst.

Dissertations presented for science and engineering degrees
in Moscow during 1951.

SO: Sum. No. 480, 9 May 55